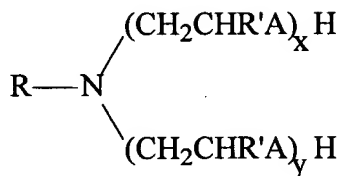


- AB
24. The method of claim 23 wherein said invert emulsion drilling fluid comprises:
an oleaginous fluid;
a non-oleaginous fluid; and
an amine surfactant having the structure



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3; and
wherein the acid is functionally able to protonate the amine surfactant.

REMARKS REGARDING AMENDMENTS:

Applicant respectfully submits that no new matter is introduced by the proposed amendments to the specification.

Support for the above amendments to the claims can be found in the original specification as filed in the following locations:

Amendment to Claim:
1, 12

Disclosure in Specification Supporting Amendment:
Page 8, line 19

The claims and amended claims are submitted as being clearly distinct and patentable over the art of record and therefore Applicant respectfully requests their entry and allowance by the Examiner.

Applicant hereby requests for any extension of time that may be deemed necessary to further the prosecution of this application. Applicant's representative hereby authorizes the Commissioner to charge any additional fees which may be required, or credit any overpayment, to the Deposit Account No. 01-2508, referencing Order No. MIDR:582--1/WHC.

In order to facilitate the resolution of any issues or questions presented by this paper, Applicant respectfully requests that the Examiner directly contact the undersigned by phone to further the discussion.

In order to promote the prosecution of this application, the Examiner is hereby authorized to contact the undersigned by electronic mail. Please address all e-mail to: whitec@howrey.com.

Respectfully submitted,



Carter J. White

Patent Agent

Reg. No. 41,374

Date: 26 Jan 2001

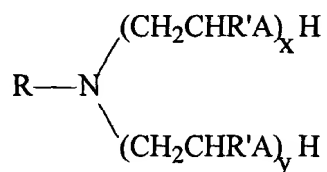
RECEIVED - 8100260

Marked-up CLAIMS AS OF Preliminary Amendment

WHAT IS CLAIMED IS:

1. (Amended) An invert emulsion fluid having utility for drilling, completing, or working over subterranean wells, said fluid comprising:

- a) an oleaginous fluid;
- b) a non-oleaginous fluid; and
- c) an amine surfactant having the structure



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3.

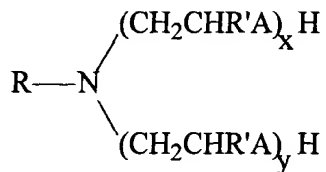
- 2. The invert emulsion fluid of claim 1 wherein said oleaginous fluid comprises from about 30% to about 99% by volume of said fluid.
- 3. The invert emulsion fluid of claim 1 wherein said oleaginous fluid is selected from a group consisting of diesel oil, mineral oil, a synthetic oil, and combinations thereof.
- 4. The invert emulsion fluid of claim 1 wherein said oleaginous fluid further comprising from 5% to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.
- 5. The invert emulsion fluid of claim 1 wherein said non-oleaginous fluid comprises from about 1% to about 70% by volume of said fluid.

Marked-up CLAIMS AS OF Preliminary Amendment

6. The invert emulsion fluid of claim 1 wherein said non-oleaginous fluid is an aqueous liquid.
7. The invert emulsion fluid of claim 6 wherein said aqueous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.
8. The invert emulsion fluid of claim 1 wherein R is unsaturated.
9. The invert emulsion of claim 1 further comprising a weighting agent or a bridging agent.
10. The invert emulsion of claim 9 wherein the weighting or bridging agent is selected from the group consisting of calcium carbonate, dolomite, siderite, barite, celestite, iron oxides, manganese oxides, ulexite, carnalite, and sodium chloride.
11. The invert emulsion of claim 1 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C₁₂ to C₂₂ hydrocarbon; or combinations thereof.
12. (Amended) An invert emulsion fluid having utility for drilling completing, or working over subterranean wells, said fluid comprising:
- a) an oleaginous liquid, said oleaginous liquid comprising from about 30% to about 99% by volume of said fluid;
 - b) a non-oleaginous liquid, said non-oleaginous liquid comprising from about 1% to about 70% by volume of said fluid; and

Marked-up CLAIMS AS OF Preliminary Amendment

- c) an amine surfactant present in said fluid at a concentration of 0.1% to 5.0% by weight of said fluid, said amine surfactant having a structure of:



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3.

13. The invert emulsion fluid of claim 12 wherein said oleaginous liquid is selected from a group consisting of diesel oil, mineral oil, a synthetic oil, and combinations thereof.
14. The invert emulsion fluid of claim 13 wherein said oleaginous fluid further comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.
15. The invert emulsion fluid of claim 14 wherein said non-oleaginous liquid is an aqueous liquid.
16. The invert emulsion fluid of claim 15 wherein said aqueous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.
17. The invert emulsion fluid of claim 12 wherein R is unsaturated.

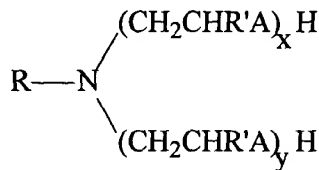
Marked-up CLAIMS AS OF Preliminary Amendment

18. The invert emulsion of claim 12 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C₁₂ to C₂₂ hydrocarbon; or combinations thereof.

19-22. Canceled

23. In a method of drilling a subterranean well using a drilling fluid, wherein said drilling fluid is an oil-based drilling fluid, the improvement comprising the use of an invert emulsion drilling fluid that is reversible to a regular drilling fluid upon protonation of an amine based emulsifier with an acidic material.

24. The method of claim 23 wherein said invert emulsion drilling fluid comprises:
an oleaginous fluid;
a non-oleaginous fluid; and
an amine surfactant having the structure



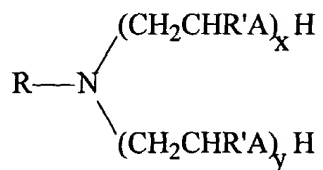
wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3; and
wherein the acid is functionally able to protonate the amine surfactant.

CLAIMS AS OF Preliminary Amendment

WHAT IS CLAIMED IS:

1. (Amended) An invert emulsion fluid having utility for drilling, completing, or working over subterranean wells, said fluid comprising:

- a) an oleaginous fluid;
- b) a non-oleaginous fluid; and
- c) an amine surfactant having the structure



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3.

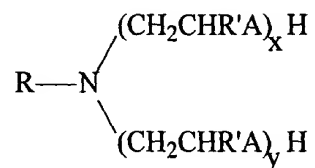
- 2. The invert emulsion fluid of claim 1 wherein said oleaginous fluid comprises from about 30% to about 99% by volume of said fluid.
- 3. The invert emulsion fluid of claim 1 wherein said oleaginous fluid is selected from a group consisting of diesel oil, mineral oil, a synthetic oil, and combinations thereof.
- 4. The invert emulsion fluid of claim 1 wherein said oleaginous fluid further comprising from 5% to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.
- 5. The invert emulsion fluid of claim 1 wherein said non-oleaginous fluid comprises from about 1% to about 70% by volume of said fluid.

CLAIMS AS OF Preliminary Amendment

6. The invert emulsion fluid of claim 1 wherein said non-oleaginous fluid is an aqueous liquid.
7. The invert emulsion fluid of claim 6 wherein said aqueous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.
8. The invert emulsion fluid of claim 1 wherein R is unsaturated.
9. The invert emulsion of claim 1 further comprising a weighting agent or a bridging agent.
10. The invert emulsion of claim 9 wherein the weighting or bridging agent is selected from the group consisting of calcium carbonate, dolomite, siderite, barite, celestite, iron oxides, manganese oxides, ulexite, carnalite, and sodium chloride.
11. The invert emulsion of claim 1 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C₁₂ to C₂₂ hydrocarbon; or combinations thereof.
12. (Amended) An invert emulsion fluid having utility for drilling completing, or working over subterranean wells, said fluid comprising:
- a) an oleaginous liquid, said oleaginous liquid comprising from about 30% to about 99% by volume of said fluid;
 - b) a non-oleaginous liquid, said non-oleaginous liquid comprising from about 1% to about 70% by volume of said fluid; and

CLAIMS AS OF Preliminary Amendment

- c) an amine surfactant present in said fluid at a concentration of 0.1% to 5.0% by weight of said fluid, said amine surfactant having a structure of:



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3.

13. The invert emulsion fluid of claim 12 wherein said oleaginous liquid is selected from a group consisting of diesel oil, mineral oil, a synthetic oil, and combinations thereof.
14. The invert emulsion fluid of claim 13 wherein said oleaginous fluid further comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.
15. The invert emulsion fluid of claim 14 wherein said non-oleaginous liquid is an aqueous liquid.
16. The invert emulsion fluid of claim 15 wherein said aqueous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.
17. The invert emulsion fluid of claim 12 wherein R is unsaturated.

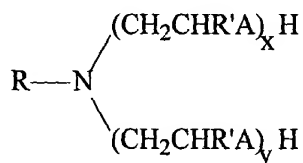
CLAIMS AS OF Preliminary Amendment

18. The invert emulsion of claim 12 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C₁₂ to C₂₂ hydrocarbon; or combinations thereof.

19-22. Canceled

23. In a method of drilling a subterranean well using a drilling fluid, wherein said drilling fluid is an oil-based drilling fluid, the improvement comprising the use of an invert emulsion drilling fluid that is reversible to a regular drilling fluid upon protonation of an amine based emulsifier with an acidic material.

24. The method of claim 23 wherein said invert emulsion drilling fluid comprises:
an oleaginous fluid;
a non-oleaginous fluid; and
an amine surfactant having the structure



wherein R is a C₁₂-C₂₂ aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C₁ to C₃ alkyl; A is NH or O, and 1 ≤ x+y ≤ 3; and

wherein the acid is functionally able to protonate the amine surfactant.